

We claim:

1. (Amended) A method for amplifying a target polynucleotide contained in a sample comprising the steps of:
 - (a) contacting the sample with a first support which binds to the target polynucleotide;
 - (b) substantially separating the support and bound target polynucleotide from the sample thereby producing a separated target polynucleotide; and
 - (c) amplifying in vitro the separated target polynucleotide of (b).
2. The method of claim 1 wherein the first support is retrievable.
3. The method of claim 1 wherein the first support includes a probe which binds with the target polynucleotide.
4. (Amended) The method of claim 1 wherein [the target polynucleotide is amplified with a polymerase] said amplifying in vitro comprises amplifying said separated target polynucleotide with a polymerase.
5. (Amended) The method of claim 4 wherein the polymerase is a DNA polymerase, an RNA polymerase, or a transcriptase [or Q β replicase].
6. (Amended) The method of claim 4 wherein the separated target polynucleotide is a DNA polynucleotide and the polymerase is a DNA polymerase.
7. (Amended) A method for detecting a target polynucleotide contained in a sample comprising the steps of:
 - (a) contacting the sample with a first support which binds to the target polynucleotide;
 - (b) substantially separating the first support and bound target polynucleotide from the sample thereby producing a separated target polynucleotide;
 - (c) amplifying in vitro the target separated polynucleotide of (b), thereby producing an amplified

target polynucleotide; and

(d) detecting the presence of the amplified target polynucleotide of (c) as indicative of the presence of the target polynucleotide in said sample.

8. The method of claim 7 wherein the first support is retrievable.

9. The method of claim 8 wherein the first support includes a probe which binds with the target polynucleotide.

10. (Amended) The method of claim 7 wherein [the target polynucleotide is amplified with a polymerase] said amplifying in vitro comprises amplifying said separated target polynucleotide with a polymerase.

11. (Amended) The method of claim 10 wherein the polymerase is a DNA polymerase, an RNA polymerase, or a transcriptase [or Q₁ replicase].

12. (Amended) The method of claim 11 wherein the separated target polynucleotide is a DNA polynucleotide and the polymerase is a DNA polymerase.

13. (Amended) The method of claim 7 wherein the amplified target polynucleotide is contacted with a label, and the presence of the target polynucleotide in the sample is indicated by detection of said label.

14. (Amended) The method of claim 7 wherein the amplified target polynucleotide is contacted with a labeled probe, and the presence of the target polynucleotide in the sample is indicated by detection of said label.

15. The method of claim 7 wherein the amplified target polynucleotide is contacted with a second support which binds to the amplified target polynucleotide.

16. (Amended) The method of claim 15 wherein the [amplified target polynucleotide is contacted with] second support includes a labeled probe, and the presence of the target

polynucleotide in the sample is indicated by detection of said label.

17. (Amended) The method of claim 16 wherein [the target polynucleotide is amplified with a polymerase] said amplifying *in vitro* comprises amplifying said separated target polynucleotide with a polymerase.

18. (Amended) The method of claim 17 wherein the separated target polynucleotide is a DNA polynucleotide and the polymerase is a DNA polymerase.

19. (Amended) A method for detecting a target polynucleotide contained in a sample comprising the steps of:

(a) contacting the sample with a first support which binds to the target polynucleotide;

(b) substantially separating the first support and bound target polynucleotide from the sample, thereby producing a separated target polynucleotide;

(c) amplifying *in vitro* the [sample] separated target polynucleotide of (b) with a DNA polymerase, thereby producing an amplified target polynucleotide;

(d) contacting the amplified target polynucleotide of (c) with a second support which binds to the amplified target polynucleotide and also with a labeled probe which binds to the amplified target polynucleotide; and

(e) detecting the presence of [the amplified target polynucleotide] labeled probe as indicative of the presence of the target polynucleotide in said sample.

delete 20. A kit for detecting a target polynucleotide contained in a sample comprising:

(a) means for substantially separating the target polynucleotide from the sample;

(b) means for amplifying the target polynucleotide;

(c) means for binding the amplified target polynucleotide to a solid support; and

(d) means for labeling the amplified target polynucleotide.

delete 21. The kit of claim 20 wherein:

- (a) the means for substantially separating the target polynucleotide from the sample include a first support;
- (b) the means for amplifying the target polynucleotide include a polymerase;
- (c) the means for binding that amplified target polynucleotide to a solid support include a capture probe which binds to the solid support and to the amplified target polynucleotide; and
- (d) a detector probe for labeling the amplified target polynucleotide.

delete 22. The kit of claim 21 further comprising a capture probe which binds to the first support and to the target.

delete 23. The kit of claim 22 wherein the polymerase is a DNA polymerase and the detector probe is labeled.

delete 24. A kit for amplifying a target polynucleotide contained in a sample comprising:

- (a) means for substantially separating the target polynucleotide from the sample and
- (b) means for amplifying the target polynucleotide.

delete 25. The kit of claim 24 wherein:

- (a) the means for substantially separating the target polynucleotide from the sample includes a support which binds to the target polynucleotide and
- (b) the means for amplifying the target polynucleotide includes a polymerase.

delete 26. The kit of claim 25 wherein:

- (a) the polymerase is a DNA polymerase; and
- (b) the means for substantially separating the target polynucleotide from the sample includes a probe which binds to the target polynucleotide and the support.

27. (Amended) A method for amplifying a target polynucleotide contained in a sample

medium comprising the steps of:

- (a) contacting the sample medium with a reagent comprising a first nucleic acid probe which binds to the target polynucleotide to form a probe-target complex;
- (b) contacting the sample medium with a support which binds to the first nucleic acid probe of the probe-target complex;
- (c) substantially separating the support and bound probe-target complex from the sample medium;
- (d) contacting the support and bound probe-target complex with a second medium;
- (e) releasing the probe-target complex into the second medium;
- (f) substantially separating the support from the second medium; and
- (g) amplifying in vitro the target polynucleotide in the probe-target complex present in the second medium.

28. (Amended) A method for detecting a target polynucleotide contained in a sample medium comprising the steps of:

- (a) contacting the sample medium with reagent comprising a first nucleic acid probe which binds to the target polynucleotide to form a probe-target complex;
- (b) contacting the sample medium with a support which binds to the first nucleic acid probe of the probe-target complex;
- (c) substantially separating the support and bound probe-target complex from the sample medium;
- (d) contacting the support and bound probe-target complex with a second medium;
- (e) releasing the probe-target complex into the second medium;
- (f) substantially separating the support from the second medium;

(g) amplifying in vitro the target polynucleotide in the probe-target complex present in the second medium; and

(h) detecting the presence of the target polynucleotide in the second medium as indicative of the presence of the target polynucleotide in said sample.

29. (Amended) The method of detecting a target polynucleotide of claim 28 wherein wherein [the target polynucleotide is amplified with a polymerase] said amplifying in vitro comprises amplifying said separated target polynucleotide with a polymerase.

30. (Amended) The method for detecting a target polynucleotide of claim 29 wherein the polymerase is a DNA polymerase, an RNA polymerase, or a transcriptase[, or Q₁ replicase].

31. The method for detecting a target polynucleotide of claim 30 wherein the polymerase is a DNA polymerase.

32. (Amended) The method for amplifying a target polynucleotide of claim 27 wherein [the target polynucleotide is amplified with a polymerase] said amplifying in vitro comprises amplifying said separated target polynucleotide with a polymerase.

33. The method for amplifying a target polynucleotide of claim 32 wherein the polymerase is a DNA polymerase.

34. (Amended) A method for amplifying a target polynucleotide contained in a sample medium comprising the steps of:

(a) contacting the sample medium with a support and a probe which binds to the target polynucleotide and the support;

(b) substantially separating the support and bound probe and target polynucleotide from the sample medium;

(c) contacting the support and bound probe and target polynucleotide with a second medium;

- (d) releasing the target polynucleotide of (c) into the second medium;
- (e) substantially separating the support and bound probe from the second medium; and
- (f) amplifying in vitro the target polynucleotide present in the second medium.

35. (Amended) The method for amplifying a target polynucleotide of claim 34 wherein [the target polynucleotide is amplified with a polymerase] said amplifying in vitro comprises amplifying said separated target polynucleotide with a polymerase.

36. (Amended) The method for amplifying a target polynucleotide of claim 35 wherein the polymerase is a DNA polymerase, an RNA polymerase, or a transcriptase [or Q₁ replicase].

37. The method for amplifying a target polynucleotide of claim 36 wherein the polymerase is a DNA polymerase.

38. (Amended) A method for detecting a target polynucleotide contained in a sample medium comprising the steps of:

- (a) contacting the sample medium with a support and probe which binds to the target polynucleotide and the support;
- (b) substantially separating the support and bound probe and target polynucleotide from the sample medium;
- (c) contacting the support and bound probe and target polynucleotide with a second medium;
- (d) releasing the target polynucleotide of c into the second medium;
- (e) substantially separating the support and bound probe form the second medium;
- (f) amplifying in vitro the target polynucleotide present in the second medium, thereby producing an amplified target polynucleotide; and
- (g) detecting the presence of the amplified target polynucleotide in the second medium as indicative of the presence of the target polynucleotide in said sample.

39. (Amended) The method for detecting a target polynucleotide of claim 38 wherein [the target polynucleotide is amplified with a polymerase] said amplifying *in vitro* comprises amplifying said separated target polynucleotide with a polymerase.

40. The method for detecting a target polynucleotide of claim 39 wherein the polymerase is a DNA polymerase.

41. The method for amplifying a target polynucleotide of claim 1 wherein the target polynucleotide is amplified *in vitro* to produce a multitude of polynucleotide amplification products.

42. (Amended) The amplification method of claim [41] 1 wherein [the amplification] said amplifying *in vitro* is linear or exponential.

43. (Amended) The amplification method of claim 42 wherein [the amplification] said amplifying *in vitro* is exponential.

44. (Amended) The amplification method of claim [41] 1 wherein the separated target polynucleotide is amplified with a polymerase and at least one oligonucleotide primer.

45. (Amended) The amplification method of claim 44 wherein [the amplification] said amplifying *in vitro* is linear or exponential.

46. (Amended) The amplification method of claim [41] 1 wherein [the target polynucleotide is amplified with more than one polymerase] said amplifying *in vitro* comprises amplifying said separated target polynucleotide with more than one polymerase.

47. The method for detecting a target polynucleotide of claim 7 wherein the target polynucleotide is amplified *in vitro* to produce a multitude of polynucleotide amplification products.

48. (Amended) The detection method of claim [47] wherein [the amplification] said amplifying *in vitro* is linear or exponential.

49. (Amended) The detection method of claim 48 wherein [the amplification] said amplifying *in vitro* is exponential.

50. (Amended) The detection method of claim [47] wherein the separated target polynucleotide is amplified with a polymerase and at least one oligonucleotide primer.

51. (Amended) The detection method of claim 50 wherein [the amplification] said amplifying *in vitro* is linear or exponential.

52. (Amended) The detection method of claim [47] wherein [the target polynucleotide is amplified with more than one polymerase] said amplifying *in vitro* comprises amplifying said separated target polynucleotide with more than one polymerase.

53. The method for detecting a target polynucleotide of claim 19 wherein the target polynucleotide is amplified *in vitro* to produce a multitude of polynucleotide amplification products.

delete?? 54. The detection kit of claim 20 wherein the means for amplifying provide for *in vitro* amplification of the target polynucleotide to produce a multitude of polynucleotide amplification products.

delete?? 55. The amplification kit of claim 24 wherein the means for amplifying provide for *in vitro* amplification of the target polynucleotide to produce a multitude of polynucleotide amplification products.

56. The method for amplifying a target polynucleotide of claim 27 wherein the target polynucleotide is amplified *in vitro* to produce a multitude of polynucleotide amplification products.

57. The method for detecting a target polynucleotide of claim 28 wherein the target polynucleotide is amplified *in vitro* to produce a multitude of polynucleotide amplification products.

58. The method for amplifying a target polynucleotide of claim 34 wherein the target polynucleotide is amplified *in vitro* to produce a multitude of polynucleotide amplification products.

59. The method for detecting a target polynucleotide of claim 38 wherein the target polynucleotide is amplified *in vitro* to produce a multitude of polynucleotide amplification products.

delete 60. The exponential amplification of claim 43 wherein the target polynucleotide is amplified with random primers.

delete 61. The exponential amplification of claim 43 wherein the target polynucleotide is amplified with specially tailored primers.

delete 62. The exponential amplification of claim 49 wherein the target polynucleotide is amplified with random primers.

delete 63. The exponential amplification of claim 49 wherein the target polynucleotide is amplified with specially tailored primers.

64. (Amended) The method of claim 1 wherein said amplifying *in vitro* comprises amplifying the separated target polynucleotide [is amplified] non-specifically with random primers.

delete 65. The method of claim 1 wherein the separated target polynucleotide is amplified specifically with specially tailored primers.

66. (Amended) The method of claim 7 wherein said amplifying in vitro comprises amplifying the separated target polynucleotide [is amplified] non-specifically with random primers.

delete 67. The method of claim 7 wherein the separated target polynucleotide is amplified specifically with specially tailored primers.

delete 68. The amplification kit of claim 25 wherein the means for amplifying the separated target polynucleotide include means for amplifying the target polynucleotide non-specifically with random primers.

delete 69. The amplification kit of claim 25 wherein the means for amplifying the separated target polynucleotide include means for amplifying the target polynucleotide specifically with specially tailored primers.

70. The method of claim 9 wherein the probe first binds with the target polynucleotide by hybridizing to a specific sequence in the target polynucleotide, and then binds to the first support.

71. (Amended) The method of claim 70 wherein said amplifying in vitro comprises amplifying the separated target polynucleotide [is amplified] non-specifically with random primers.

delete 72. The method of claim 70 wherein the separated target polynucleotide is amplified specifically with specially tailored primers.

73. (Amended) The method of claim [72] 71 wherein the sample is a clinical sample.

74. The method of claim 73 wherein the probe comprises a nucleotide sequence specific to a complementary nucleotide sequence in the target polynucleotide and a homopolymeric tail sequence.

75. The method of claim 74 wherein the support comprises a homopolymeric tail complementary to the homopolymeric tail of the probe.

delete 76. A kit for detecting a target polynucleotide contained in a sample comprising:

- (a) means for substantially separating the target polynucleotide from the sample prior to amplification of the target polynucleotide;
- (b) means for amplifying *in vitro* the separated target polynucleotide; and
- (c) means for detecting the presence of the amplified target polynucleotide as indicative of the presence of the target polynucleotide in the sample.

delete 77. The detection kit of claim 76 wherein:

- (a) the means for substantially separating the target polynucleotide from the sample include a first support and a probe that binds to both the first support and the target polynucleotide;
- (b) the means for amplifying *in vitro* the separated target polynucleotide include a polymerase; and
- (c) the means for detecting the presence of the amplified target polynucleotide include a detector probe.

delete 78. The detection kit of claim 77 wherein the means for substantially separating the target polynucleotide from the sample includes a first support that binds to the target polynucleotide via a probe.

delete 79. The detection kit of claim 78 wherein the means for substantially separating the target polynucleotide from the sample include a probe that first binds to the target polynucleotide by hybridizing to a specific sequence in the target polynucleotide, and then binds to the first support.

delete 80. The detection kit of claim 79 wherein the means for amplifying the separated target polynucleotide include means for amplifying the target polynucleotide non-specifically with random primers.

delete 81. The detection kit of claim 79 wherein the means for amplifying the separated target polynucleotide include means for amplifying the target polynucleotide specifically with specially tailored primers.

delete 82. The detection kit of claim 81 wherein the sample is a clinical sample.

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Proposed amendments to claims 44 and 50

44. (Twice amended) The amplification method of claim [41] 1 wherein the separated target polynucleotide is amplified with [a polymerase and] at least one oligonucleotide primer.

50. (Twice amended) The detection method of claim [47] 7 wherein the separated target polynucleotide is amplified with [a polymerase and] at least one oligonucleotide primer.

44. The amplification method of claim 1 wherein the-separated target polynucleotide is amplified with at least one oligonucleotide primer.

50. The detection method of claim 7 wherein the separated target polynucleotide is amplified with at least one oligonucleotide primer.

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Proposed amendments to claims 64, 66, 71

64. (Twice amended) The method of claim 1 wherein said amplifying in vitro comprises amplifying the separated target polynucleotide [is amplified] non-specifically [with random primers].

66. (Twice amended) The method of claim 7 wherein said amplifying in vitro comprises amplifying the separated target polynucleotide [is amplified] non-specifically [with random primers].

71. (Twice amended) The method of claim 70 wherein said amplifying in vitro comprises amplifying the separated target polynucleotide [is amplified] non-specifically [with random primers].

73. (Twice amended) The method of claim 70 [72] 71 wherein the sample is a clinical sample.

64. The method of claim 1 wherein said amplifying in vitro comprises amplifying the separated target polynucleotide non-specifically.

66. The method of claim 7 wherein said amplifying in vitro comprises amplifying the separated target polynucleotide non-specifically.

71. The method of claim 70 wherein said amplifying in vitro comprises amplifying the separated target polynucleotide non-specifically.

73. The method of claim 70 the sample is a clinical sample.

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Proposed amendments to proposed deleted claims 65, 67, and 72 (to recite only specially tailored primers)

65. (Twice amended) The method of claim 1 wherein said amplifying in vitro comprises amplifying the separated target polynucleotide [is amplified] [specifically] with specially tailored primers.

67. (Twice amended) The method of claim 7 wherein said amplifying in vitro comprises amplifying the separated target polynucleotide [is amplified] [specifically] with specially tailored primers.

72. (Twice amended) The method of claim 70 wherein said amplifying in vitro comprises amplifying the separated target polynucleotide [is amplified] [specifically] with specially tailored primers.

73. (Twice amended) The method of claim 72 [72] 71 wherein the sample is a clinical sample.

65. The method of claim 1 wherein said amplifying in vitro comprises amplifying the separated target polynucleotide with specially tailored primers.

67. The method of claim 7 wherein said amplifying in vitro comprises amplifying the separated target polynucleotide with specially tailored primers.

72. The method of claim 70 wherein said amplifying in vitro comprises amplifying the separated target polynucleotide with specially tailored primers.

73. The method of claim 72 wherein the sample is a clinical sample.